

Application No.: 09/803702

Case No.: 55907US003

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

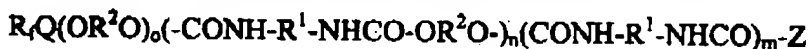
**Listing of Claims:**

1 to 19 (Cancelled)

20 to 29 (Withdrawn)

**NEW claims**

30. (New) Fluorochemical urethane oligomeric compounds of the formula:



wherein:

n is a number from 1 to 10;

o is a number from 0 to 1;

m is a number from 0 to 1;

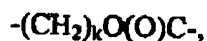
$R_f$  is selected from the group consisting of perfluoroalkyl groups having 1 to 12 carbon atoms, and perfluoroheteroalkyl groups having 3 to 50 carbon atoms;

$R^1$  is a divalent organic group, which is the residue of a polyisocyanate;

$R^2$  is a divalent organic group, which is a residue of the polyol, at least a portion of which is substituted one or more perfluoroalkyl groups, perfluoroheteroalkyl groups, perfluoroheteroalkylene groups, or mixtures thereof;

Z is  $R_f Q$ -, a water-solubilizing group or a polymerizable group;

Q is selected from the following structures, wherein each k is independently an integer from 0 to 20,  $R_1'$  is hydrogen, phenyl, or alkyl of 1 to 4 carbon atoms, and  $R_2'$  is alkyl of 1 to 20 carbon atoms:



Application N : 09/803702

Case No.: 55907US003

$-\text{SO}_2\text{NR}_1'(\text{CH}_2)_k\text{O}-$ ,  
 $-(\text{CH}_2)_k\text{O}(\text{CH}_2)_k\text{C}(\text{O})\text{O}-$ ,  
 $-\text{CONR}_1'(\text{CH}_2)_k\text{O}(\text{O})\text{C}-$ ,  
 $-\text{CH}_2\text{CH}(\text{OR}_2')\text{CH}_2\text{O}(\text{O})\text{C}-$ ,  
 $-(\text{CH}_2)_k\text{SC}(\text{O})-$ ,  
 $-(\text{CH}_2)_k\text{S}(\text{CH}_2)_k\text{O}(\text{O})\text{C}-$ ,  
 $-(\text{CH}_2)_k\text{S}(\text{CH}_2)_k\text{OC}(\text{O})-$ ,  
 $-(\text{CH}_2)_k\text{SO}_2-$ ,  
 $-\text{SO}_2\text{NR}_1'(\text{CH}_2)_k-$ ,  
 $-(\text{CH}_2)_k\text{SO}_2\text{NR}_1'(\text{CH}_2)_k\text{C}(\text{O})\text{O}-$ ,  
 $-(\text{CH}_2)_k\text{SO}_2(\text{CH}_2)_k\text{C}(\text{O})\text{O}-$ ,  
 $-(\text{CH}_2)_k\text{S}(\text{CH}_2)_k\text{C}(\text{O})\text{O}-$ ,  
 $-\text{SO}_2\text{NR}_1'(\text{CH}_2)_k\text{C}(\text{O})\text{O}-$ ,  
 $-\text{C}_k\text{H}_{2k}-\text{OC}(\text{O})\text{NH}-$ ,  
 $-\text{OC}(\text{O})\text{NR}_1'(\text{CH}_2)_k-$ ,  
 $-\text{CONR}_1'(\text{CH}_2)_k\text{C}(\text{O})\text{O}-$ ,  
 $-\text{CH}_2\text{CH}(\text{OR}_2')\text{CH}_2\text{C}(\text{O})\text{O}-$ ,  
 $-(\text{CH}_2)_k\text{O}-$ ,  
 $-\text{C}_k\text{H}_{2k}-\text{NR}_1'\text{C}(\text{O})\text{NH}-$ ,  
 $-(\text{CH}_2)_k\text{NR}_1'-$ , and  
 $-(\text{CH}_2)_k\text{NR}_1'\text{C}(\text{O})\text{O}-$ .

31. (New) The fluorochemical urethane oligomeric compounds of claim 30, which comprise the condensation reaction product of:

- (a) one or more fluorinated-polyols;
- (b) one or more polyisocyanates; and
- (c) one or more monofunctional fluorine-containing compounds comprising one functional group that is reactive with the hydroxyl group of said polyol (a) or with the isocyanate group of the polyisocyanate (b).

Application No.: 09/803702

Case No.: 55907US003

32. (New) The oligomeric compounds of claim 31 further comprising the reaction product of one or more water-solubilizing compounds comprising one or more water solubilizing groups and at least one electrophilic or nucleophilic moiety, said solubilizing groups independently pendant from the repeating unit, or terminal portion.

33. (New) The oligomeric compounds of claim 32 wherein said water-solubilizing group is selected from the group consisting of carboxylate, sulfate, sulfonate, phosphonate, ammonium, and quaternary ammonium groups.

34. (New) The oligomeric compounds of claim 31 further comprising the reaction product of one or more polymerizable compounds comprising one or more polymerizable groups and at least one electrophilic or nucleophilic moiety, said polymerizable groups independently pendant from the repeating unit, or terminal portion.

35. (New) The oligomeric compounds of claim 34, wherein said polymerizable groups are selected from the group consisting of acrylate, methacrylate, vinyl, allyl, and glycidyl groups.

36. (New) The oligomeric compounds of claim 30 comprising compounds of the formula:  
$$R_f Q (-CONH-R^1-NHCO-OR^2O)_n (CONH-R^1-NHCO)_m -QR_f$$
  
wherein:

n is a number from 1 to 10 inclusive;

m is 1;

$R_f$  is a perfluoroalkyl group having 1 to 12 carbon atoms, or a perfluoroheteroalkyl group having 3 to 50 carbon atoms with all perfluorocarbon chains present in said perfluoroheteroalkyl group having 1 to 6 carbon atoms;

Q is  $-C_kH_{2k}-OC(O)NH-$  or  $-C_kH_{2k}-NRC(O)NH-$ , wherein k is an integer from 0 to 20;

$R^1$  is a straight chain alkylene, of 1 to 14 carbon atoms;

$R^2$  is a polyvalent organic group which is a residue of the polyol, that is a straight or branched chain alkylene, cycloalkylene, arylene or heteroalkylene group; at least a portion of

Application No.: 09/803702

Case No.: 55907US003

R<sup>2</sup> groups are substituted with or contain one perfluoroalkyl group, perfluoroheteroalkyl group, perfluoroheteroalkylene group, or mixtures thereof.

37. (New) The oligomeric compounds of claim 31 comprising the condensation reaction product of one or more fluorinated polyols, one or more non-fluorinated polyols, one or more polyisocyanates and one or more monofunctional fluorine-containing compounds.

38. (New) The oligomeric compounds of claim 31 wherein the oligomer comprises the condensation reaction product of one or more fluorinated polyols, an excess amount (relative to the polyol) of one or more linear alkylene diisocyanates, and sufficient fluorinated monoalcohols to react with the terminal isocyanate groups

39. (New) The oligomeric compounds of Claim 31 wherein the fluorine containing group of said fluorinated polyol is a perfluoroalkyl group of 1 to 12 carbon atoms.

40. (New) The oligomeric compounds of Claim 31 wherein the fluorine containing group of said fluorinated polyol is a perfluoroalkyl group of 3 to 5 carbon atoms.

41. (New) The oligomeric compounds of Claim 31 wherein the fluorine containing group of said fluorinated polyol is a perfluorobutyl group.

42. (New) The oligomeric compounds of Claim 31 wherein the monofunctional fluorine-containing compound is a compound of the following formula I:



wherein:

R<sub>f</sub> is selected from the group consisting of perfluoroalkyl group having 1 to 12 carbon atoms, and perfluoroheteroalkyl group having 3 to 50 carbon atoms with all perfluorocarbon chains present of said perfluoroheteroalkyl group having 6 or fewer carbon atoms;

Q' is a functional group that is reactive with the terminal isocyanate of the polyisocyanate or terminal hydroxy group of the polyol.

Application No.: 09/803702

Case No.: 55907US003

43. (New) The monofunctional fluorine-containing compound of claim 42 wherein Q' is selected from hydroxyl, secondary amino, oxazoliny, oxazolonyl, acetyl, acetonyl, carboxyl, isocyanato, epoxy, aziridiny, thio, and acyl halide groups.
44. (New) The oligomeric compounds of claim 31 further comprising the reaction product of one or more non-fluorinated polyols.
45. (New) A coating composition comprising a mixture comprising:
- (a) a solvent; and
  - (b) the fluorochemical oligomeric compounds of Claim 30.
46. (New) The coating composition of claim 45 wherein the fluorochemical oligomeric compounds further comprises one or more water-solubilizing groups.
47. (New) The coating composition of claim 18 wherein said mixture comprises an aqueous solution, dispersion or suspension of said fluorochemical oligomeric compounds
-